Space Weather Forecast

Issued on Wednesday, 02 November 2022 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm on 3rd, 4th and 5th of November.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the last 24 hours, with only minor Common-class flares observed. There are five numbered regions on the visible disc, two mature and relatively stable regions in the northwest and northeast quadrants. A further increasingly complex region has also developed in the southeast. The remaining two regions are small and simple sunspots. A filament eruption (arc of plasma) was observed lifting off the northwest quadrant around 01/1600 UTC, which has produced a coronal mass ejection (CME), which is currently being analysed for any potential Earth-directed component. Currently, no Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: The solar wind is slightly elevated, with a slowly declining trend. This is indicative of the waning coronal hole fast wind. Total interplanetary magnetic field strength was weak, with the important north-south component varying weakly. Geomagnetic activity was mainly Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low or Very Low, with a very slight, but increasing chance of an isolated Moderate activity.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are forecast. The Earth is currently under the influence of an easing fast wind from a coronal hole. Another connection to a fast wind from a coronal hole, located near centre disc, is likely to arrive at Earth late on the 2nd Nov and into 3rd Nov, persisting into the 5th Nov, with speeds likely to be in the range of 500-600km/s. Geomagnetic activity will be mainly Quiet to Unsettled on the 2nd Nov. There is a chance of Active to G1/Minor Storms either late on 3rd or during the 4th and 5th November, due to the connection with a fast wind from a coronal hole.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	40	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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